COMPAQ

3Dlabs OXYGEN VX1 PCI Graphics Controller

Installation Guide

Order Number: EK-VX1GC-IG. A01

This guide describes the installation of the 3Dlabs OXYGEN VX1 PCI graphics controller on supported Compaq products.

© 2000 Compaq Computer Corporation

Compaq, the Compaq logo, Compaq Insight Manager, AlphaServer, StorageWorks, and TruCluster Registered in U.S. Patent and Trademark Office. OpenVMS and Tru64 are trademarks of Compaq Information Technologies Group, L.P. in the United States and other countries.

Linux is a registered trademark of Linus Torvalds in several countries. UNIX is a trademark of The Open Group in the United States and other countries. All other product names mentioned herein may be trademarks of their respective companies.

Compaq shall not be liable for technical or editorial errors or omissions contained herein. The information in this document is provided “as is” without warranty of any kind and is subject to change without notice. The warranties for Compaq products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty.

FCC NOTICE: This equipment generates and uses radio frequency energy. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart G of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio and television interference in a residential installation.

Contents

Preface v

Chapter 1 Overview

1.1 Introduction 1-1
1.2 Module Description 1-1
1.3 Connector Pinouts 1-3
1.4 Specifications 1-4

Chapter 2 Installation

2.1 Introduction 2-1
2.2 Unpacking 2-1
2.3 Installation Procedure 2-2

Chapter 3 Compaq Tru64 UNIX Configuration

3.1 Resolutions 3-1
3.2 Restrictions and Limitations 3-2
3.2.1 Minimum Console Revision 3-2
3.2.2 Multiple Colormaps 3-2
3.2.3 Default Visual Information 3-2
3.2.4 Backing Store and Save Unders 3-3
3.3 Configuring Graphics Resolution or Vertical Refresh Rate for Tru64UNIX 3-3
3.3.1 Current Graphics Resolution 3-3
3.3.2 Changing the Resolution & Refresh Rate Using the X servers File 3-3
3.3.3 How to Determine which GUI is in Use 3-4
3.4 Multihead Support 3-7
3.4.1 Multihead Resrictions and Limitations 3-7
3.4.2 Matching X Server Primary Screen with VGA Console 3-8
3.5 Messages 3-8

Chapter 4 Compaq OpenVMS Software Installation and Customization

4.1 Installation Preparation 4-1
4.2 Installation 4-2
4.2.1 OpenVMS Version 7.3 4-2
4.2.2 OpenVMS Version 7.2-1H1, 7.2-1, and 7.1-2 4-2
4.3 Video Resolutions Supported 4-3
4.4 Default Graphics Settings 4-4
4.5 Determining Current Settings 4-4
4.6 Overriding Default Settings 4-4
4.7 Multihead Support 4-5
4.7.1 Matching Primary Screen with VGA Console 4-6
4.8 Messages 4-6
4.8 POLYCENTER Software Installation 4-7

Figures

1–1 3Dlabs OXYGEN VX1 PCI Graphics Controller 1-2

Tables

1–1 3Dlabs OXYGEN VX1 PCI Graphics Controller 1-1
1–2 Standard 15-Pin VGA Connector Pinout 1-3
1–3 3Dlabs OXYGEN VX1 PCI Graphics Controller Specifications 1-4
3–1 Supported Video Modes 3-1
4–1 OpenVMS Version Supporting the 3Dlabs OXYGEN VX1 4-2
4–2 Supported Video Modes 4-3

Preface

Intended Audience

This manual is for owners installing the 3Dlabs OXYGEN VX1 PCI graphics controller in supported Compaq products.

Document Structure

This manual has four chapters.

- **Chapter 1, Overview**, provides an overview of the 3Dlabs OXYGEN VX1 PCI graphics controller.
- **Chapter 2, Installation**, describes how to install the 3Dlabs OXYGEN VX1 PCI graphics controller in a supported Compaq AlphaServer or AlphaStation.
- **Chapter 3, Compaq Tru64 UNIX Configuration**, describes how to configure the 3Dlabs OXYGEN VX1 PCI graphics controller in a system running the Tru64 UNIX operating system.
- **Chapter 4, Compaq OpenVMS Software Installation and Customization**, describes how to configure the 3Dlabs OXYGEN VX1 PCI graphics controller in a system running the OpenVMS operating system.

3Dlabs OXYGEN VXI PCI Graphics Controller Documentation

See the following related documentation for additional information.

- Compaq documentation for Tru64 UNIX
- Compaq documentation for OpenVMS

Conventions Used in This Guide

In this guide, every use of Tru64 UNIX refers to Compaq's Tru64 UNIX and DIGITAL UNIX operating systems. Every use of OpenVMS refers to Compaq's OpenVMS operating systems.

This guide also uses the following conventions:

Convention	Meaning
Note	A note calls the reader's attention to any item of information that may be of special importance.
Caution	A caution contains information essential to avoid damage to the equipment.
italic type	*Italic type* indicates complete titles of manuals.
bold type	**Bold type** indicates text that is highlighted for emphasis.
`Monospaced`	In text, this typeface indicates the exact name of a command, routine, partition, pathname, directory, or file.

Information on the Internet

Visit the Compaq Web site at www.compaq.com for more information about the 3Dlabs OXYGEN VX1 PCI graphics controller.

Chapter 1
Overview

1.1 Introduction

This chapter provides a brief overview of the 3Dlabs OXYGEN VX1 PCI graphics controller.

1.2 Module Description

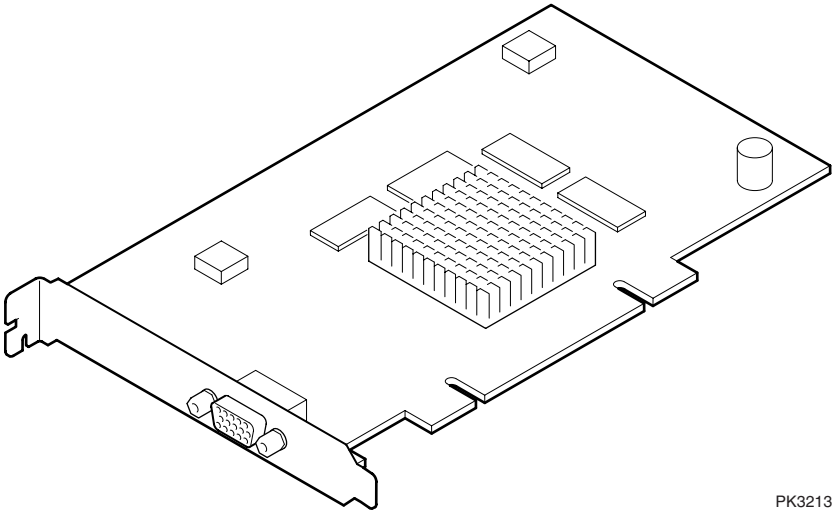
The 3Dlabs OXYGEN VX1 PCI graphics controller accelerator module is a single expansion-slot, 32-bit PCI bus graphics option that provides 2D graphics acceleration for supported Compaq systems. It is based on 3Dlabs' GLINT P3 graphics chip.

Table 1–1 3Dlabs OXYGEN VX1 PCI Graphics Controller

Option	Description
SN-PBXGF-AB	3Dlabs OXYGEN VX1 PCI graphics controller with 32 MB of SDRAM memory

For up to date minimum operating system and firmware revision information supported for the 3Dlabs OXYGEN VX1 PCI graphics controller, refer to the system QuickSpecs located at http://www.compaq.com.

Figure 1–1 3Dlabs OXYGEN VX1 PCI Graphics Controller



The 3Dlabs OXYGEN VX1 PCI graphics controller has a standard 15-pin VGA connector. There is no VGA switch; VGA functions and multihead support are automatically configured through the console firmware and software. See sections 3.4 and 4.7 for more information on multihead support for Tru64 UNIX and OpenVMS respectively.

1.3 Connector Pinouts

Table 1–2 contains a listing of the pins and signals found on the standard 15-pin VGA connector.

Table 1–2 Standard 15-Pin VGA Connector Pinout

Pin No.	Signal
1	RED VIDEO
2	GREEN VIDEO
3	BLUE VIDEO
4	MID2
5	GROUND
6	GROUND
7	GROUND
8	GROUND
9	+5V SUPPLY
10	GROUND
11	MID0
12	BI-DIRECTIONAL DATA
13	HORIZONTAL SYNC or COMPOSITE SYNC
14	VERTICAL SYNC (VCLK)
15	DATA CLOCK

1.4 Specifications

Table 1–3 lists the specifications for the 3Dlabs OXYGEN VX1 PCI graphics controller.

Table 1–3 3Dlabs OXYGEN VX1 PCI Graphics Controller Specifications

Maximum Resolution	1920 x 1200 16-bit @ 70 Hz 1280 x 1024 24 bit @ 85 Hz
Color planes	24
Unified memory (frame buffer, Z-buffer, texture memory)	32 MB
Form factor	Single half-length PCI card
PCI	PCI 2.2, 32-bit, 33 or 66 MHz, universal signaling
Input voltage	3.3 Vdc, 5 Vdc, +12 Vdc
Power	25 W maximum
Operating temperature	10°C to 40°C (50°F to 104°F)
Relative humidity	0% to 95% noncondensing

Chapter 2
Installation

2.1 Introduction

This chapter describes the installation of the 3Dlabs OXYGEN VX1 PCI graphics controller module in a supported Compaq product. Topics included in this chapter are:

- Unpacking
- Hardware installation

2.2 Unpacking

The graphics option hardware is packaged in a single carton that contains the following:

Description	Part Number
3Dlabs OXYGEN VX1 Graphics Controller, 32MB PCI	SN-PBXGF-AB
3Dlabs OXYGEN VX1 PCI Graphics Controller Installation Guide (this manual)	EK-VX1GC-IG

2.3 Installation Procedure

The following section describes how to install the 3Dlabs OXYGEN VX1 PCI graphics controller. To install the module, perform the following steps:

Note

Before installing the module, check your monitor specification for signal compatibility and supported features offered by the 3Dlabs OXYGEN VX1 PCI graphics controller.

Caution

Static electricity can damage sensitive electronic components. When handling your graphics option, use an anti-static wriststrap that is connected to a grounded surface on your computer system.

1. Perform a normal power-down of your computer system and disconnect the monitor cable.
2. Disconnect all AC power cables from the wall outlet (or turn off the circuit breakers if applicable to your system) to remove power from the system.
3. Remove the cover from your computer (refer to your system documentation).
4. Put on an anti-static wriststrap.

Caution

An anti-static wriststrap must be worn when handling any module to prevent damage to the module.

5. If your computer has an existing graphics module, remove the screw that secures it and then remove the module.
6. If your system had a previously installed graphics option, you can use that slot if it is a PCI slot, or you can select any empty PCI expansion slot *on the primary PCI bus*. Remove the slot cover if you are using a new slot. Refer to your system owner's guide for information about graphics option slots.

7. Grasp the top edge of the graphics option, carefully insert it into the slot, and seat it firmly.
8. Secure the module with the screw.
9. Replace the computer cover.
10. Ensure that the monitor cable is connected to the video output connector located on the back of the graphics option.
11. Reconnect the AC power cables to the wall outlet (or turn on the circuit breakers if applicable to your system) to restore power to the system.
12. Perform a normal power-up of your computer system.

Chapter 3
Compaq Tru64 UNIX Configuration

This chapter describes how to configure the 3Dlabs OXYGEN VX1 PCI graphics controller in a system running Compaq's Tru64 UNIX operating system.

3.1 Resolutions

3Dlabs OXYGEN VX1 PCI graphics controllers are capable of supporting various graphics resolutions and refresh rates as shown in Table 3–1.

Table 3–1 Supported Video Modes

Resolution	Color Depths (Bits per Pixel)	Refresh Rates
640x480	8, 16, 24	60, 65, 70, 75, 85 Hz
800x600	8, 16, 24	60, 65, 70, 75, 85 Hz
1024x768	8, 16, 24	60, 65, 70, 75, 85 Hz
1152x870	8, 16, 24	60, 65, 70, 75, 85 Hz
1152x900	8, 16, 24	60, 65, 70, 75, 85 Hz
1280x1024	8, 16, 24	60, 65, 70, 75, 85 Hz
1600x1200	8, 16, 24	60, 65, 70, 75 Hz
1600x1280	8, 16, 24	60, 65, 70 Hz
1920x1080	8, 16	60, 65, 70 HZ
1920x1200	8, 16	60, 65, 70 HZ

3.2 Restrictions and Limitations

This section of the document contains limitations and restrictions of the OXYGEN VX1 hardware and software.

3.2.1 Minimum Console Revision

The minimum Tru64 UNIX firmware version for 3Dlabs OXYGEN VX1 PCI graphics controller single head support is V5.8 (V5.9 for multihead configurations – see Section 3.4).

3.2.2 Multiple Colormaps

Multiple colormaps are not supported. The 3Dlabs OXYGEN VX1 PCI graphics controller supports only one installed colormap at one time. Exceeding this limit will cause colormap flashing, also known as "technicolor."

Applications should not install or deinstall colormaps themselves. The window manager should perform these actions. However, the application is responsible for providing the window manager with hints as to which colormaps to install or deinstall. You provide this information using the Xlib function `XSetWMColormapWindows()`. This function sets the `WM_COLORMAP_WINDOWS` property for a given window.

3.2.3 Default Visual Information

The 3Dlabs OXYGEN VX1 board can only support one visual type at one time. Supported visual types are 8-bit PseudoColor, 16-bit TrueColor, and 24-bit TrueColor. By default, the default depth and visual class is 8-bit PseudoColor. To change the default visual, you must edit the X server's configuration file which is located `at /usr/var/X11/Xserver.conf`.

As an example, to switch to 24-bit TrueColor:

```
! Permedia VX1 Server args start
       -pn -bs -su -nice -2 -depth 24 -vclass TrueColor
! Permedia VX1 Server args end
```

You then need to restart the X server. When logged in remotely:

```
/usr/sbin/init.d/xlogin restart
```

3.2.4 Backing Store and Save Unders

By default, backing store and save unders are enabled. If the default visual depth is changed to 16 or 24, it is recommended that backing store and save unders be disabled.

To disable these features, add the options "`-bs -su`" to the argument list in the X server's configuration file. Refer to the example in Section 3.2.3.

3.3 Configuring Graphics Resolution or Vertical Refresh Rate for Tru64 UNIX

There are two X server related files that can be used to configure or change characteristics of the X server. Systems by default use a file named "Xservers" to start and optionally pass startup configuration parameters to the Xserver.

3.3.1 Current Graphics Resolution

The graphics Resolution and Refresh Rate is set at the default value, 1024x768 at 70Hz Refresh Rate. The graphics resolution of a running system can be obtained by executing the command /usr/sbin/sizer -gr. The Refresh Rate may be obtained from the X servers file /var/dt/Xservers.

3.3.2 Changing the Resolution & Refresh Rate Using the Xservers File

The steps necessary to change the X servers graphics resolution differ depending on which X Windowing System is in use, XDM/Motif or the newer standard CDE (Common Desktop Environment). UNIX systems running version 4.0F, and G can use either the XDM/Motif or CDE GUIs.

If your system is running version 4.0F, or G, you must determine which GUI is in use for the system and then proceed to the appropriate section of this document, "How to Change the Resolution and Refresh Rate on XDM GUI" or "How to Change the Resolution and Refresh Rate on CDE GUI".

Systems running UNIX versions 5.0 or higher can use only the CDE GUI, so you may skip directly to "How to Change the Resolution and Refresh Rate on CDE GUI".

3.3.3 How to Determine which GUI is in Use

1. Check the environment variable XLOGIN defined in the file /etc/rc.config.
   Example (showing the CDE GUI being used):
   ```
   # /usr/sbin/rcmgr get XLOGIN
   cde
   #
   ```

1. If the variable is defined to be "cde," then the default GUI is CDE. If the variable is defined to be "xdm," then the default GUI is XDM/Motif.

How to Change the Resolution and Refresh Rate on XDM GUI

1. Log in to the system as "root".
2. Make a backup copy of the file /usr/lib/X11/xdm/Xservers .
   Example:
   # cp /usr/lib/X11/xdm/Xservers /usr/lib/X11/xdm/Xservers.original
3. Edit the file `/usr/lib/X11/xdm/Xservers` and add the appropriate X server Option, "-screen0" and or "-vsync0" to the line that starts the X server. This line is generally the last line in the file Xservers.
   Example line from the Xservers file used with XDM/Motif.
   ```
   :0 local /usr/bin/X11/X
   ```
   Or
   ```
   :0 local /usr/bin/X11/X -nice -2
   ```

   X server Options:
   -screen[screen] WxH
   Set screen (W)width and (H)height.
   -vsync[screen] Hz
   Set screen (Hz) Vertical refresh rate

Note

- These are device dependent X server options and not available for ALL graphics options. Please refer to Table 3–1 for supported Resolutions and Refresh Rates.
- Both the Width and Height should be specified in the "-screen" option and not just the Width. On some X server graphics devices setting ONLY the Width will cause the X server to fail.
- The [screen] number need not be specified if only one screen exists or if the user wants all screens to use the same values. The [screen] value is generally '0' as shown in the example below.
  Example:
  ```
  -screen0 1280x1024
         ^
         |_ [screen] value
  ```
- Anything added after the "-I" option will be ignored by the X server and passed on to the DDX, Device Dependent X layer of the server. The "-screen" and or "-vsync" option(s) should precede the "-I" option.

4. Restart the GUI using the appropriate method.
   For DIGITAL UNIX V4.* systems use:
   ```
   # /sbin/init.d/xlogin stop
   # /sbin/init.d/xlogin start
   ```

How to Change the Resolution and Refresh Rate on CDE GUI

1. Log in to the system as "root".

2. Check to see if the directory /etc/dt/config exists. If not, create it as follows:
   Example:
   ```
   # mkdir /etc/dt/config
   # chmod 755 /etc/dt/config
   ```

3. Copy the Xservers file from the path `/usr/dt/config` to the path `/etc/dt/config`.
   Example:
   ```
   # cp /usr/dt/config/Xservers /etc/dt/config/Xservers
   ```

4. Edit the file /etc/dt/config/Xservers and add the appropriate X server Option, "-screen0" and or "-vsync0" to the line that starts the X server. This line is generally the last line in the file Xservers.

   Example line from the Xservers file used with CDE:
   ```
   :0 Local local@console /usr/bin/X11/X :0 -screen0 1280x1024
   ```

   X server Options:
   Set screen (W)width and (H)height.
   ```
   -screen[screen] WxH
   ```

   Set screen (Hz) Vertical refresh rate
   ```
   -vsync[screen] Hz
   ```

   Note

   - These are device dependent X server options and not available for ALL graphics options. See Table 3–1 for supported Resolutions and Refresh Rates.
   - Both the Width and Height should be specified in the "-screen" option and not just the Width. On some X server graphics devices setting ONLY the Width will cause the X server to fail.
   - The [screen] number need not be specified if only one screen exists or if the user wants all screens to use the same values. The [screen] value is generally '0' as shown in the example below.
     Example:
     ```
     -screen0 1280x1024
             ^
             |  [screen] value
     ```
   - Anything added after the "-I" option will be ignored by the X server and passed on to the DDX, Device Dependent X layer of the server. The "-screen" and or "-vsync" option(s) should precede the "-I" option.

5. Restart the CDE GUI.
   For DIGITAL UNIX V5.* systems use:
   ```
   # /sbin/init.d/xlogin stop
   # /sbin/init.d/xlogin start
   ```

Examples of Typical Resolution and Refresh Rate Settings Using CDE

- Setting the Screen Resolution to 1280 x 1024.

  ```
  :0 Local local@console /usr/bin/X11/X :0 -screen0 1280x1024
  ```

- Setting the Screen Resolution to 1280 x 1024 and the Vertical Refresh Rate to 75Hz.

```
:0 Local local@console /usr/bin/X11/X :0 -screen0 1280x1024 -vsync0 75
```

- Setting the Screen Resolution to 1920 x 1080 and the Vertical Refresh Rate to 70Hz.

```
:0 Local local@console /usr/bin/X11/X :0 -screen0 1920x1080 -vsync0 70
```

3.4 Multihead Support

The minimum firmware version for multihead 3Dlabs OXYGEN VX1 PCI graphics controller support on AlphaServer and AlphaStation DS10, DS10L, DS20E, and ES40 is V5.9. The Alpha system firmware must be updated to support 3Dlabs OXYGEN VX1 PCI graphics controllers. Once the Alpha system firmware has been updated, multiple 3Dlabs OXYGEN VX1 PCI graphics controllers may reside in the same system.

Note

Only one 3Dlabs OXYGEN VX1 PCI graphics controller will be used for the VGA console; it must be placed on the primary PCI bus.

The card in the lowest numbered slot will usually be selected to be the VGA console. See your workstation or server user manual to determine slot numbering. The maximum number of 3Dlabs OXYGEN VX1 PCI graphics controllers supported by software is 16, but please see the following section for limitations.

3.4.1 Multihead Restrictions and Limitations

The 3Dlabs OXYGEN VX1 PCI graphics controller is not supported in conjunction with any other non-3Dlabs OXYGEN VX1 PCI graphics controller residing in the same system.

All 3Dlabs OXYGEN VX1 PCI graphics controllers in a single system must have the same color depth. The supported number and configuration of multiple 3Dlabs OXYGEN VX1 PCI graphics controllers varies by platform. Other documentation shipped with your workstation or server will outline specific limitations on the actual number and the configuration of multihead support.

3.4.2 Matching X Server Primary Screen with VGA Console

PCI slots are not always probed by the system in the order of their slot numbers. Because of this, the order of X server screens will not necessarily correspond to the order of the slots in which the 3Dlabs OXYGEN VX1 PCI graphics controllers reside. The X server command line option `-screenOrder` may be used to alter the mapping of physical screens to logical screens. In particular, this can be useful if you desire the X server's primary screen to coincide with the VGA console.

3.5 Messages

Device driver messages are typically logged to `/var/adm/messages` on Tru64 UNIX systems. Should problems arise, this file should be checked for informational messages; an example is shown here.

- `p3g: %dx%d cursor glyph truncated to hardware limits`
  `The X Server attempted to use a cursor larger than the 64x64 limits of the hardware. Cursor glyph will be displayed incorrectly. Application should be brought into conformance with X11 expectations.`

Chapter 4
Compaq OpenVMS Software Installation and Customization

This chapter provides information for installing and modifying the OXYGEN VX1 PCI graphics controller two-dimensional (2D) support software on an OpenVMS system.

The method used to load the software is directly dependent on the version of OpenVMS that you will be installing or upgrading to. Section 4.2, Installation, explains in detail the steps that must be taken for each of the different OpenVMS versions.

The behavior of the 3Dlabs OXYGEN VX1 PCI graphics controller support software may be modified after installation on OpenVMS by editing the appropriate files and issuing DCL commands. (See Section 4.6.)

4.1 Installation Preparation

This section describes how to prepare for installation of the OXYGEN VX1 PCI graphics controller support software.

The 3Dlabs OXYGEN VX1 PCI graphics controller support software will be fully integrated into OpenVMS Version 7.3. For versions prior to 7.3, Table 4-1 will supply you with information on the steps that need to be taken for the software driver installation.

Table 4-1 OpenVMS Version Supporting 3Dlabs OXYGEN VX1 PCI Graphics Controller

OpenVMS Version	Alpha Platform
7.3	Automatically loaded on the system when using this version for an upgrade or installation.
7.2-1H1 7.2-1 7.1-2	Copy the POLYCENTER Software Installation patch kits from net location http://www.support.compaq.com/patches/* OR Copy the patch kits by anonymous ftp at http://ftpl.support.compaq.com in VMS version specific subdirectories of /public/vms/axp/
Prior to 7.1-2	Not supported
*__Caution:__ The required list of patch kits for a particular version of OpenVMS can vary over time. Check the Readme files associated with each of the kits to be sure that the patch kit is appropriate for your usage.	

4.2 Installation

This section covers installation of the 3Dlabs OXYGEN VX1 PCI graphics controller software driver on various versions of the OpenVMS operating system.

4.2.1 OpenVMS Version 7.3

For OpenVMS Version 7.3 and higher, the 3Dlabs OXYGEN VX1 PCI graphics controller support software is loaded automatically following installation and becomes active when the operating system is booted. No other action needs to be taken by the system operator.

4.2.2 OpenVMS Versions 7.1-2, 7.2-1, and 7.2-1H1

To install the 3Dlabs OXYGEN VX1 PCI graphics controller support software on OpenVMS Version 7.1-2, 7.2-1, or 7.2-1H1, you must copy the latest UPDATE and GRAPHICS POLYCENTER Software Installation utility patch kits from the World Wide Web location at http://www.support.compaq.com/patches/ or via anonymous ftp at ftp1.support.compaq.com. Then, use the POLYCENTER Software Installation utility (DCL PRODUCT INSTALL) to install the latest UPDATE kit and the

latest GRAPHICS kit, if required. View the Readme files for each kit to determine if the UPDATE kit has superseded the GRAPHICS kit or if the GRAPHICS kit is newer than the UPDATE kit.

If you ordered the 3Dlabs OXYGEN VX1 PCI graphics controller separately, then follow the additional instructions provided with the module to install the appropriate support software contained on the CD-ROM shipped with the module. Also, check the World Wide Web location at http:://www.support.Compaq.com/patches/ for newer patch kits that may have superseded the installation CD-ROM provided.

For more information on using POLYCENTER Software Installation utility, see the *POLYCENTER Software Installation Utility User's Guide.*

4.3 Video Resolutions Supported

The 3Dlabs OXYGEN VX1 PCI graphics controller is capable of supporting the graphics resolutions and refresh rates shown in Table 4-2.

Table 4-2 Supported Video Modes

Resolution	Color Depths (Bits per Pixel)	Refresh Rates (Hertz)
640 x 480	8, 16, 24	60, 65, 70, 75, 85
800 x 600	8, 16, 24	60, 65, 70, 75, 85
1024 x 768	8, 16, 24	60, 65, 70, 75, 85
1152 x 870	8, 16, 24	60, 65, 70, 75, 85
1152 x 900	8, 16, 24	60, 65, 70, 75, 85
1280 x 1024	8, 16, 24	60, 65, 70, 75, 85
1600 x 1200	8, 16, 24	60, 65, 70, 75
1600 x 1280	8, 16, 24	60, 65, 70
1920 x 1080	8, 16	60, 65, 70
1920 x 1200	8, 16	60, 65, 70

The modes available are dependent on monitor capabilities. In general, refresh rates below 70 Hz are discouraged, as they tend to show flicker based on the lighting source and surrounding equipment.

The available resolution is monitor dependent. All heads must have the same pixel depth. The pixel depth default is 8 bits per pixel.

4.4 Default Graphics Settings

The default graphics resolution is 1024 x 768. The default refresh rate is 70 Hz and the default color depth is 8 bits per pixel.

4.5 Determining Current Settings

To find the current settings under OpenVMS, issue the following two commands, in order, at the DCL prompt:

```
$ @DECW$UTILS:DECW$DEFINE_UTILS
$ XDPYINFO
```

In addition, you can show the following logical names at the DCL prompt:

```
$ SHOW LOGICAL/SYSTEM DECW$SERVER PIXEL_DEPTH
$ SHOW LOGICAL/SYSTEM DECW$SERVER REFRESH_RATE
$ SHOW LOGICAL/TABLE=DECW$SERVER* *SIZE_IN_PIXELS
```

If any of these logicals is not defined, then the respective default is in effect (see Section 4.4).

Alternatively, you can also view the following error log file to determine the current settings:

```
$ TYPE SYS$MANAGER:DECW$SERVER_0_ERROR.LOG
```

4.6 Overriding Default Settings

To override any of the default settings, follow these steps:

1. Copy or rename the SYS$MANAGER:DECW$PRIVATE_SERVER_SETUP.TEMPLATE file to create a new command (.com) file called DECW$PRIVATE_SERVER_SETUP.COM.
2. Now make the edits for the settings you want to change using a text editor, and save the file.

3. For the changes to take effect immediately you must restart the X server so that the new command file and changed settings will be used. The command to do this is as follows:

   ```
   $ @SYS$MANAGER:DECW$STARTUP RESTART
   ```

   The new file settings will now override the original default settings.

The DECW$PRIVATE_SERVER_SETUP procedure contains documentation for many of the default X server settings which may be changed. For more information on making changes to the default settings, symbols, and system-wide logicals, refer to the manual titled *Managing DECwindows Motif for OpenVMS Systems*. This document describes the symbols and settings that can be changed in the DECW$PRIVATE_SERVER_SETUP.COM file. For a copy of the document, contact your local sales support representative or visit the Compaq web site located at http://www.compaq.com.

Additional system logicals are described in SYS$MANAGER:DECW$DEVICE_CONFIG_GF.COM. However, this file should **not** be modified. If you wish to make changes to the default logicals defined within it, redefine them in the DECW$PRIVATE_SERVER_SETUP.COM file. These changes will supersede the logicals assigned in the device configuration file.

Some of the items that you can change via system logicals are described in the device configuration file but are not normally defined in DECW$PRIVATE_SERVER_SETUP.COM file. Those logical default settings not defined in that file but that can be changed include the following items:

```
DECW$XSIZE_IN_PIXELS
DECW$YSIZE_IN_PIXELS
DECW$SERVER_REFRESH_RATE
DECW$SERVER_PIXEL_DEPTH
```

4.7 Multihead Support

Multiple 3Dlabs OXYGEN VX1 PCI graphics controllers may reside on the same system. However, only one will be used for the VGA console.

The supported number and configuration of multiple 3Dlabs OXYGEN VX1 PCI graphics controllers varies by platform. OpenVMS can support up to four devices on a single system. The actual maximum is a combination of the

number of slots available and the number of heads (graphics modules) qualified for each of the platforms. Other software may put additional restrictions on the number of units supported.

Other documentation shipped with your workstation or server may put specific limitations on the number and configurations for multihead support. Therefore, you should refer to the appropriate documentation set for limitations or exclusions that are appropriate to your situation.

The 3Dlabs OXYGEN VX1 PCI graphics controller is not supported in conjunction with any other graphics board residing in the same system.

4.7.1 Matching Primary Screen with VGA Console

Screen 0 is always the VGA-enabled head and must be installed in the lowest numbered slot of **all** installed graphics cards and must be placed on the PCI bus containing the ISA bridge. If you wish to change a screen with any of the console displays, you can alter the logical order for mapping of physical screens to logical screens by making a copy of the file DECW$PRIVATE_SERVER_SETUP.TEMPLATE and saving it to a new file named DECW$PRIVATE_SERVER_SETUP.COM. You can then make changes to the default settings by editing the newly created file. Refer to Section 4.6 for details on changing the default settings.

Caution: Changing the default settings in the DECW$PRIVATE_SERVER_SETUP.COM file to try matching a screen with a console display can have unanticipated and adverse consequences. You should attempt to perform this operation only if you fully understand **all** possible consequences including the chance for loss of your primary screen.

4.8 Messages

Server messages are typically logged to the DECW$SERVER_0_ERROR.LOG file located in the SYS$MANAGER directory. Be sure to check this file first for informational messages related to any problems that are encountered during installation or usage.

4.9 POLYCENTER Software Installation

At the end of the OpenVMS POLYCENTER Software Installation procedure, a message is displayed that recommends a reboot of the system. At the conclusion of the installation, the POLYCENTER Software Installation utility does not prompt for or enforce a reboot of the system for the new software image to become effective immediately. The 3Dlabs OXYGEN VX1 PCI graphics controller two-dimensional (2D) support software becomes active only after the operating system has been rebooted.

If the software is being installed in a clustered environment and it is not convenient to perform a reboot immediately following installation, then a rolling reboot may be used for the new image to take effect across all systems.